



CENTRAL INTELLIGENCE AGENCY

WASHINGTON, D. C. 20505

Executive Registry

84-300912

PUBLIC AFFAIRS

Phone: (703) 351-7676

2 August 1984

Mr. Roger E. McCarthy  
President,  
Association of Former Intelligence Officers  
San Francisco Bay Area Chapter  
P.O. Box 1603  
Novato, California 94948

Dear Roger:

John McMahon has asked me to thank you for your letter of 27 July and let you know that we will keep AFIO in mind when John makes his next trip to the West Coast. At the moment I don't know when that will be, but I'll try and give you as much advance notice as possible.

Best regards,



George V. Lauder  
Director

STAT

ODCI/PAO [redacted] bg/7676(2Aug84)

STAT

Orig - Add  
1 - PAO Chrono  
✓ 1 - EA/DDCI  
1 - PAO (MED)

P-300



*200*

Executive Registry
84 - 3009/1

1 August 1984

MEMORANDUM FOR: Director of Public Affairs

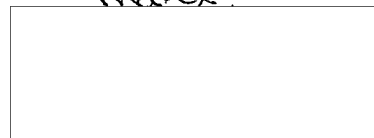
FROM: Executive Assistant to the DDCI

George,

1. Would you please write a note to Roger McCarthy advising him that John asked you to drop him a line and let him know that we will keep his group in mind anytime John might be in the area, etc., etc. Also mention that we have passed on his information to the appropriate Agency people (and please do so).

2. Perhaps you could just make a note and include this possibility anytime you might be putting together a speaking circuit for John in that area.

*Thank*



STAT

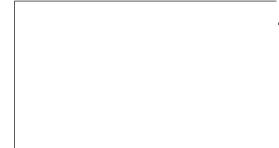


MEMORANDUM FOR: *EA / DDCI*



STAT

*Forwarded directly in  
case John wishes to prepare a  
personal acknowledgment. P/s  
return if you wish me to  
forward for action.*



STAT

*7/30/84*

Date

FORM 101 USE PREVIOUS  
5-75 EDITIONS



*P-306*



## Association of Former Intelligence Officers

SAN FRANCISCO BAY AREA CHAPTER  
P.O. BOX 1603  
NOVATO, CA 94948  
(415) 897-7637

27 July 1984

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Hon. John McMahon  
Deputy Director, C.I.A.  
Washington, D.C.

Executive Registry

84-3009

Dear John,

I write to convey the enclosures relating to a development which may have considerable application and use to the C.I.A. and to invite you to address our chapter of A.F.I.O. anytime you may be in the area.

Firstly, the Datacopy image processing system is most impressive and with plans for portable models and further minaturization in the works I believe there are many applications and uses of interest to those in the collection and communication aspects of the Agency. It may well be that the appropriate office(s) is in contact with Datacopy, but if not I suggest it worthwhile for someone to take a good look. I have enclosed the cards of the individual who gave the demonstration at Datacopy yesterday as well as the card of the individual from Micro-Records who has worked closely with Datacopy here. Amazing product! Micro-Records has also linked other computers to the imaging system with excellent results, in case that question arises.

Secondly, I want to reaffirm that our chapter, along with the many others who would join with us from fraternal organizations here, would be delighted if during any visit here you could find time to speak to us at a luncheon or dinner.

The cartoon enclosed is one which I think deserves to be used in training as depicting the essence of the "Tainted American Observer". Trust all is well with you, despite the tugs, pulls and pressures.

Warm Regards,

*Roger*  
Roger E. McCarthy

*P.S. My apologies for sending the enclosures to you, but I am not in touch with anyone in the agency, thus the larger envelope that it would otherwise have been.  
REM*



**Micro-Records Company**  
IMAGE TECHNOLOGY AT WORK

## DATACOPY PRESENTS

### WIPS

RUSSELL C. ABERCROMBIE

### IMAGE PROCESSING

**DATACOPY**  
The Eye of the Computer™

Datacopy Corporation  
1215 Terra Bella Avenue  
Mountain View, California 94043

Telephone (415) 965-7900  
Telex 701994 DATACOPY UD

1150 Union Street  
San Francisco, CA 94109  
(415) 441-3730

617 W. Park Row  
Arlington, TX 76010  
(817) 265-2951

essing System a

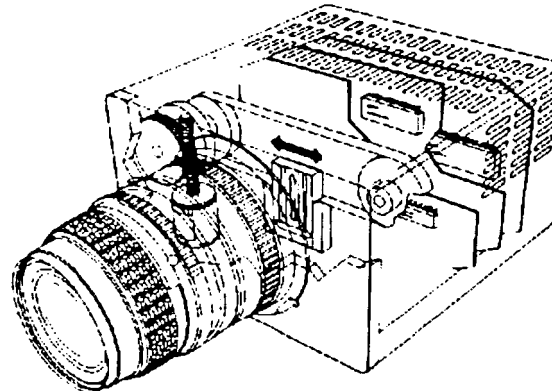
... of merging te

preparation. It works with most popular word processing and data base management software programs.

The sophisticated image capture capability of WIPS allows you to integrate virtually any image, such as these eyes taken from a color advertisement, into a text document. Your standard word processor can become a word and image processor for generating memos, reports, technical manuals and graphic layouts. Not only can images be captured, but they can be manipulated for proper presentation. Images can be reduced or enlarged, rotated, segmented and selectively erased using the software. Cut and pasting can be done electronically, in seconds and without mess.



Images can be captured from photographs, as the eyes above were, or as line drawings such as this one of the Datacopy Model 610 Electronic Digitizing Camera. The scanning mechanism of the Model 610 is also the basis for the Model 680 Graphic Scanner which was used to capture these images. The Model 680 is designed to capture images of documents up to 11 x 14 inches or small three dimensional objects. It is compact and has optimized illumination built in, ideal for office applications.



This document was prepared using the Datacopy Model 680 Graphic Scanner and Model 110 Image Processing Interface for the IBM PC XT running WIPS software and Volkswriter Deluxe word processing software. It was printed on a QMS Lasergrafix 1200 printer.

Word Image Processing System and WIPS are trademarks of Datacopy Corporation. IBM PC XT is a registered trademark of International Business Machines Corporation. Volkswriter Deluxe is a trademark of Lifetree Software, Inc. Lasergrafix 1200 is a trademark of Quality Micro Systems, Inc.

## MICROCOMPUTERS

# PICTURE PROCESSING REACHES MICROS

## Expensive accessories can digitize images

For all the emphasis microcomputer companies place on graphics, virtually no current micro can handle the most common graphics in our lives: photographs, sketches, and other routine art. Nearly all present graphics products for micros generate charts or graphs from computer data in forms designed to work with video displays and current printers. A few companies have introduced small television cameras and a digitizing interface, but the results are unacceptable for most business applications. High-quality computer equipment that can work effectively with photographs has been too costly for the microcomputer market.

Resolution remains the biggest problem. The best microcomputer screens display about 80 to 100 dots per inch (dpi), with at most one gray tone; even the poorest newspaper photograph, which may have about the same number of dots per inch, shows grays. Ordinary magazine photographs and artwork boast much higher resolution, equivalent to several hundred dots per inch. A printed typeface is equivalent to 800-1200 dpi—higher than all but the most expensive computer image systems.

In a compromise between resolution and hardware limitations, two new products use 200 dpi: the Datacopy 610 and the Wang Professional Image Computer. Although adequate for business applications such as blueprints, signatures, and foreign scripts, 200-dpi systems won't win any art director's prizes. Prices are still high: \$10,000 for Datacopy, \$15,000 for Wang (these prices aren't directly comparable, since the packages don't work identically). But more traditional graphics computers cost \$20,000 and up.

At 200 dpi, an ordinary 8½-by-11-inch sheet of paper contains 467 kilobytes of information (2200 bits verti-

cally and 1700 horizontally)—too much for comfortable handling on most present microcomputers. So the software compresses the data. While scanning the image line by line, the camera usually encounters large white regions. Most systems don't store these white pixels individually but record their total number instead. Black areas can be stored the same way.

Calculations like these count only black or white pixels; digitizing shades of gray increases storage requirements considerably, not only because additional bits are needed to code intermediate tones, but because less compression is possible. Wang's camera can detect 64 gray levels, Datacopy's 256; yet both normally throw away the gray-scale information, since the typical business application, such as charts and text, doesn't need it. The threshold between black and white is set through software.

The compression ratio varies greatly with the subject matter, from 4:1 to as high as 100:1. Compression schemes usually work more effectively along one axis than the other, depending on the content of the page. A typical double-spaced typewritten page takes about 30 kilobytes to code in the form of a photographic image but only 1.7 kilobytes to code as individual characters. The tremendous difference means that full image processing will be used only when necessary—for reports

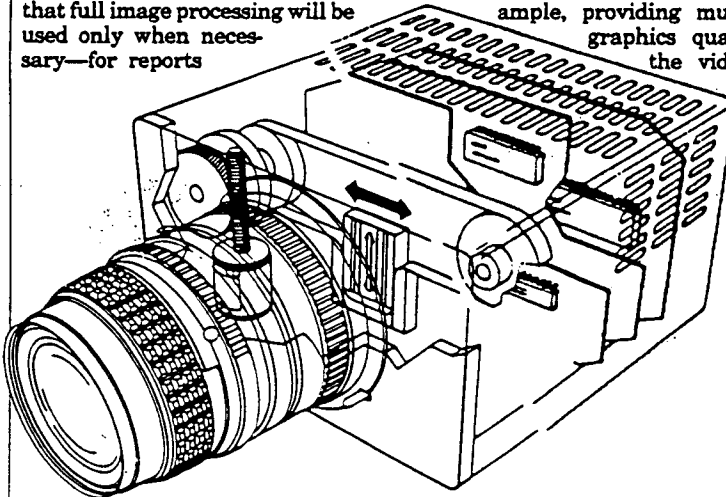
with many handwritten notes, for instance. It won't replace ordinary text coding (ASCII or EBCDIC).

Both Datacopy and Wang use solid-state photosensor arrays for geometric precision. Ordinary television camera tubes are cheaper, but they suffer from nonlinear geometry, low resolution, and changed characteristics in time. The actual sensor is a linear array that offers cheaper high-resolution imaging than a two-dimensional array, despite the need for controlling the movement precisely. To scan the image, the 1728-pixel array moves mechanically across the image plane. The stepper motor takes four seconds to scan an 8½-by-11 page in Wang's product; Datacopy's servo-controlled movement, limited by the recording time on an IBM PC disk, takes 20 seconds.

Since the cameras have focusing lenses, you can get greater detail by moving the subject closer to the camera and shooting the picture in sections. But patching together the original image from its components is difficult, because the pixels will not match exactly if anything has been moved.

Color images can be handled in three passes with color filters.

Compressed digitized pictures can be used in many ways. They could be sent during the vertical blanking interval of a video conferencing signal, for example, providing much better graphics quality than the video signal



*Datacopy 610 camera: Left half is original drawing; right half is 200-dot-per-inch Datacopy reproduction. A servo-controlled motor moves the linear imaging array across the focal plane. Array is more accurate than TV sensors.*

by Cary Lu

## MICROCOMPUTERS

itself. Conferees could therefore transmit high-resolution visual aids that wouldn't interfere with the conference video image. And some companies already use picture processing on a production line, comparing a newly made product with a picture template held in memory.

After digitization, the stored image can be displayed and manipulated on a video screen with a picture processor, much as text can be changed with a word processor. To offset its limited resolution, the display can serve as a window, showing part of the image at a time or the entire image at lower resolution.

For printed output, a 200-dpi (or better) laser printer is the obvious choice. But even low-cost dot-matrix printers can serve adequately for some needs. Epson's FX series printers, which have 200-dpi positioning accuracy, can print Datacopy images, but Epson's dot size is a little large to take full advantage of the resolution. Wang has a low-cost thermal printer and a laser printer.

Recently introduced dot-matrix printers with small dot sizes will work well at 200 dpi.

Because both the Datacopy and the Wang units digitize at the resolution prescribed by the Group 3 facsimile standard, they naturally fit into the facsimile world. Although such operation has not yet been announced, the cameras could act as facsimile input devices, and the computer display and printer could produce facsimile output. To effectively replace facsimile machines, these units need a 9600-baud modem and software that complies with the Group 3 protocol. The advantages of being able to manipulate the image will make a computer image processor more attractive than a stand-alone facsimile machine. Nevertheless, because of their somewhat lower cost (\$3000 to \$10,000), present facsimile machines will survive. Many users would like software that performs optical character recognition on incoming facsimile documents; al-

though technically feasible, this capability is not yet available.

Wang will integrate the new picture processor into its office systems, allowing users to combine pictures with word-processed text. Datacopy plans similar features, based mainly around an IBM PC/XT.

Although still expensive as microcomputer accessories go, picture processing hardware and software will become cheaper as demand grows.

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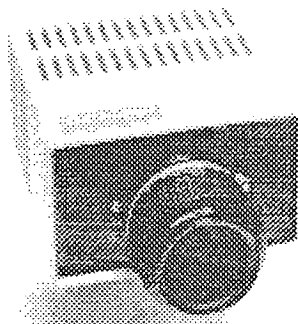
*Cary Lu is microcomputer editor for HIGH TECHNOLOGY.*

**Micro-Records Company**  
IMAGE TECHNOLOGY AT WORK  
617 West Park Row  
Arlington, Texas 76010  
Metro (817) 265-2951

## DATACOPY

## MODEL 610 ELECTRONIC DIGITIZING CAMERA

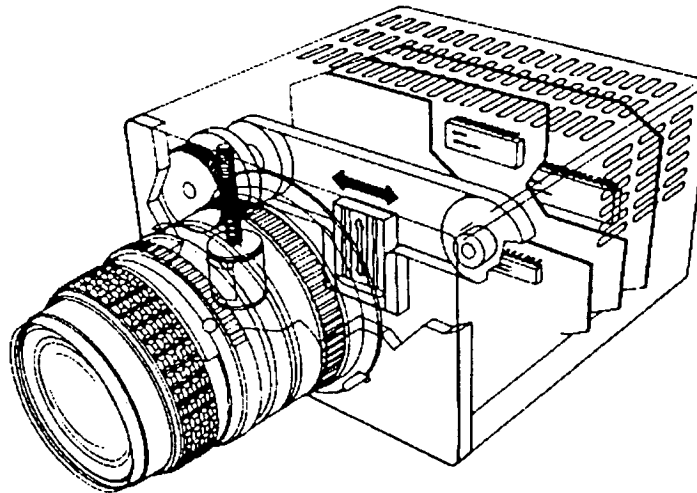
The Datacopy Model 610 Electronic Digitizing Camera (EDC) converts any image into digital information suitable for processing and storage by computer systems. It features:



- \* High resolution at low cost
- \* Flexible operation:
  - . Programmable scan times
  - . Programmable scan windows
  - . Multiple scan modes
- \* Compact, with versatile mounting
- \* Standard 35mm camera optics
- \* High reliability

The maximum resolution of the Model 610 is 1728 by 2846 picture elements (pels), each with 8 bits of grey scale information. The high resolution provided by 4,917,888 pels over the image plane makes it suitable for many applications in business and industry. This permits a resolution of 200 dots per inch over an 8 1/2 x 14 inch document. Within the camera, microprocessors control its operation and perform diagnostics, all under the control of the host computer.

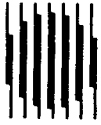
The EDC is configured for different applications via the selection of data rates by programming one of four scan modes and setting scan area windows within the maximum scan area. For finer control, scan speeds are programmable within each mode. The scan modes include continuous mode, where the array moves continuously across its defined frame, and three incremental modes. The incremental modes include two under control of the camera clock and one under control of the host computer. Scan times range from 9 seconds per frame in the continuous mode to infinity in the incremental mode. Scan area can be programmed from the maximum resolution of 1728 by 2846 pels to the smallest frame of 1 by 8 pels.



This document was prepared on the Model 90 Integrated Imaging System consisting of a Datacopy Model 610 and Model 110 Image Processing Interface operating with an IBM PC XT using Peachtext 5000 word processing software and Datacopy's Word Image Processing System software. It was printed on a QMS Lasergrafix 1200 printer.

Word Image Processing System and WIPS are trademarks of Datacopy Corporation. IBM PC XT is a registered trademark of International Business Machines Corporation. Peachtext 5000 is a trademark of Peachtree Software, Inc. Lasergrafix 1200 is a trademark of Quality Micro Systems, Inc.





# DATACOPY MODEL 900

## MODEL 900 INTEGRATED IMAGING SYSTEM

The Integrated Imaging System (IIS) from Datacopy provides the resources needed to turn an IBM PC XT and its compatibles into a powerful image processor. Everything that is necessary to get started in image processing is included:

- ☐ State of the art Electronic Digitizing Camera (EDC) including user controlled projection grid system for easy focus and framing.
- ☐ Intelligent interface to the most popular class of desktop computers.
- ☐ Flexible professional camera stand and optimized illumination under host system control.
- ☐ Complete package including user friendly imaging software that interfaces to popular word processing and data base management system software.
- ☐ Field proven hardware with upward expandable capabilities to meet most image capture requirements.

### THE MODEL 900 IIS INCLUDES:

#### Model 610F Electronic Digitizing Camera

Datacopy's feature rich Electronic Digitizing Camera (EDC) offers unmatched performance in its price range. This highly reliable, low cost device provides broad range flexibility through four scanning modes, high resolution, programmable scan times and windows. Scan modes including continuous and incremental with resolution that can be changed under program control from a maximum window of 1728 by 2846 down to 8 by 1 picture elements. The focus and framing feature gives the operator a precise, easy to use method of ensuring the best image quality. An optical, through the lens projection method is used to optimize the target location and image resolution. The focus and framing capability is activated by the host computer or from the optional hand controller.

#### Model 110 Image Processing Interface

This board plugs into the IBM PC XT backplane providing the interface between the computer and the Datacopy imaging subsystem. The Model 110 Interface will compact data when the threshold technique is employed for line art or when halftoning is desired. For continuous tone originals, the full eight bits (256 levels) of grey scale can be captured and stored.

#### Word Image Processing System Software

The Word Image Processing System (WIPS) software package gives the system user the capability to control EDC configurations, change data capture modes, manipulate, display, and print captured images. As a part of this package, utilities such as image histogram, focus aids and a light meter indicator are included to aid the system operator during data capture. In addition to the image capture and manipulation utilities, the WIPS software includes application software interfacing to most of the popular

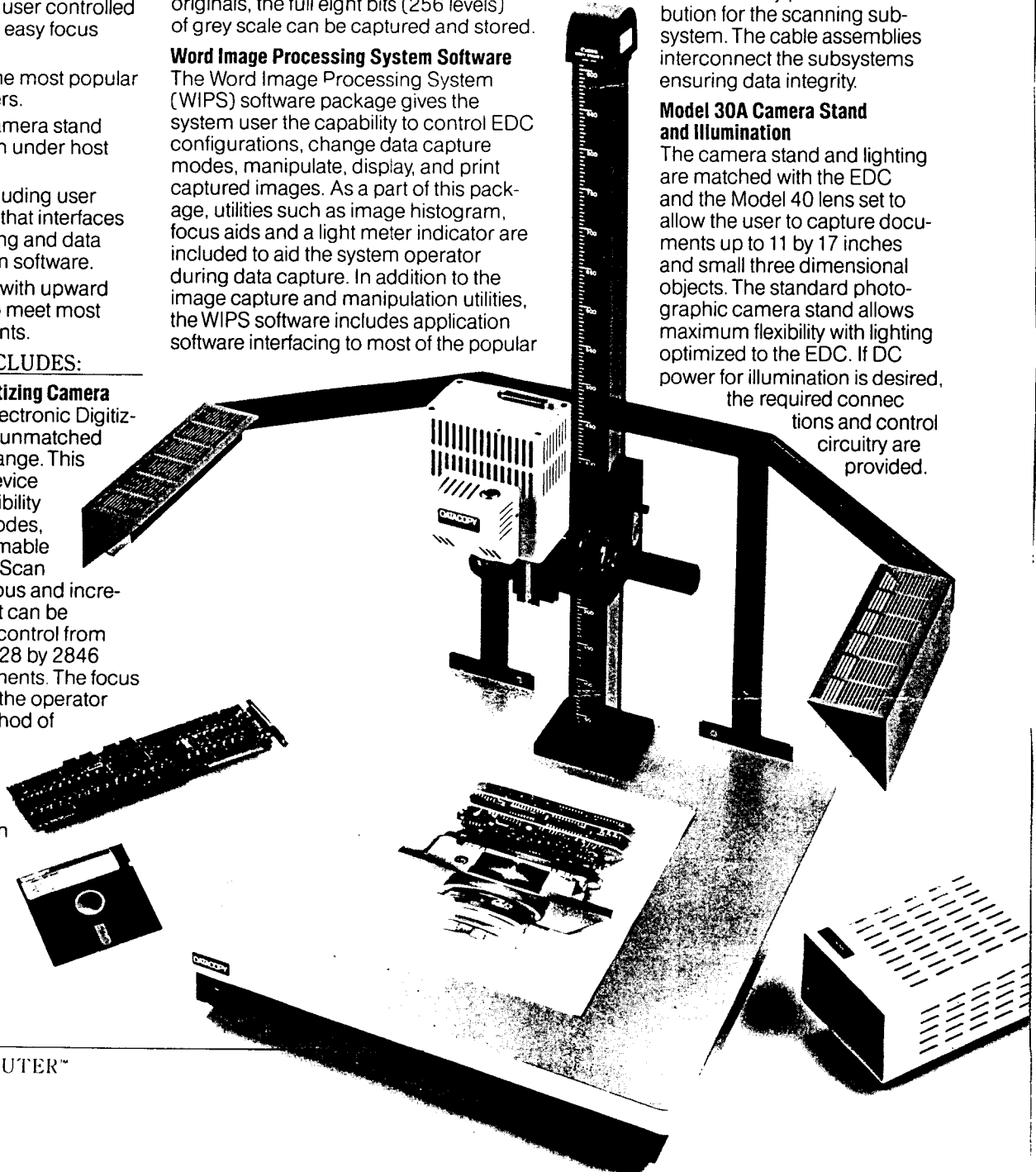
IBM PC word processing, integrated information management systems, and data base management software packages.

#### Model 20A EDC Power Supply and Cable Assemblies

This power source provides all the necessary power distribution for the scanning subsystem. The cable assemblies interconnect the subsystems ensuring data integrity.

#### Model 30A Camera Stand and Illumination

The camera stand and lighting are matched with the EDC and the Model 40 lens set to allow the user to capture documents up to 11 by 17 inches and small three dimensional objects. The standard photographic camera stand allows maximum flexibility with lighting optimized to the EDC. If DC power for illumination is desired, the required connections and control circuitry are provided.



THE EYE OF THE COMPUTER™

# **DATACOPY** **MODEL 900 INTEGRATED IMAGING SYSTEM**



## **Model 40 Lens Set**

Datacopy includes the excellent Micro-Nikkor 55 mm lens as part of the Model 40 lens set. It provides the best image quality for the majority of photographic tasks. A matching infrared blocking filter is also included.

## **FEATURES:**

### **Model 610F Electronic Digitizing Camera**

High resolution with 1728 by 2846, 8-bit picture elements (PEL) with programmable resolution down to 8 by 1, 8-bit PELs, four scan modes including high speed, continuous and slower incremental modes with programmable scan speeds. Eight bits of grey scale resolution per PEL. Compact 3.3 by 5.5 by 5.8 inches. Versatile, uses most 35 mm camera optics. Includes focus and framing module that provides precise through the lens target alignment and visual focus aids without interfering with normal scan modes.

### **Model 110 Image Processing Interface**

Standard full-size IBM PC printed circuit card. DMA capability. Software settable threshold for line copy operation. Partial dot halftone hardware to create halftoned images, under software control.

## **WIPS Software**

### **Image Capture:**

- Variable window control
- Capture Image
- Store to disk  
(compressed/non-compressed)
- Auto file
- Retrieved from disk  
(with decompression)
- Display on screen
- Line art, halftone, gray scale
- Auto/manual zoned threshold

### **Display Images:**

- Scaling (manual/auto best fit)
- Reduction
- Enlargement
- Zoom
- Scroll
- Crop, cut, paste
- Reverse image
- Rotate
- Erase, fill, clear

## **Composition:**

- Merge — 'OR', 'XOR'
- Replace
- Paint image on text screen
- Print image with text
- Scaling (automatic/manual)

## **Utilities:**

- Histogram
- Light meter
- Focus (electronic)

## **Model 40 Lens Set**

A Micro-Nikkor 55 mm, f2.8 flat-field lens with a Hoya HA50 or equivalent filter.

## **Model 20A EDC Power Supply**

Self contained unit, operating from 110, 220, 240 VAC, 48 to 62 Hz.

## **Model 30A Camera Stand and Illumination**

Base board large enough for "B-size" drawings (up to Intl B3). Four quartz halogen lamps provide flat illumination source. Interface for DC power supply (user supplied) to lamps is provided. Optional hand-held controller for basic scanning functions is available.

## **EDC Data/Power Cables**

- 15-foot shielded cable, computer to power supply.
- 8-foot shielded cable, power supply to EDC.

## **Manuals**

- Model 900 Users Guide
- Model 610F EDC Technical Reference Manual

## **Graphics Display Board Supported**

Hercules Graphic Card

## **Printers Supported**

- Epson FX/RX Series
- QMS Laser Printer Series
- Envision Model 430

## **Other Computers Supported**

The major components of the Model 900 can be interfaced to DEC LSI-11 (Q-BUS) and various IEEE 796 Multibus computer systems. Dacopy's Model 120 and Model 130 direct connections provide the respective hardware and software interface for these popular systems.

The Model 90 Integrated Imaging System is available from Dacopy. This is equivalent to the Model 900 except that the focus and framing feature is not provided.

For further information on the Dacopy Scanners, Electronic Digitizing Cameras, Computer Interface Boards, or WIPS Software, please request data sheets from a Dacopy representative.

All specifications at 72 degrees F (22 degrees C).

Specifications subject to change without notice.

Users should check with Dacopy's sales department for additional supported products.

IBM PC and IBM PC XT are registered trademarks of International Business Machines Corporation. DEC and LSI-11 are registered trademarks of the Digital Equipment Corporation. Multibus is a registered trademark of the Intel Corporation. Word Image Processing System, WIPS, and The Eye of the Computer are trademarks of Dacopy Corporation.

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BULLETIN 77D 7/84

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